

Technical and Functional Requirements	WAG 3 STAGING, STORAGE, SIZING, AND TREATMENT FACILITY	Identifier: TFR-17 Revision: 1 Page: 17 of 52
---	---	---

3. REQUIREMENTS AND BASES

3.1 Functional and Performance Requirements

3.1.1 SSSTF System Level Requirements

Rqmt ID: 001

Rqmt Classification: environmental

Rqmt Text: The SSSTF shall accept onsite INEEL CERCLA remediation waste as defined in the CERCLA Waste Inventory Database for either storage, treatment, and/or disposal.

Rqmt Basis: Provide for removal and onsite disposal of wastes which have the potential to expose workers and public to radionuclide contamination.

Rqmt Reference: (1) OU 3-13 ROD, Section 11.1.3
(2) RD/RA Scope of Work for WAG 3 OU 3-13, Section 1.3.3
(3) Table 1.6, Assumption T.

Rqmt ID: 002

Rqmt Classification: environmental

Rqmt Text: Wastes transferred from the SSSTF to the ICDF for disposal shall meet Agency approved ICDF waste acceptance criteria, and applicable RCRA land disposal restrictions.

Rqmt Basis: Provide for removal and on-site disposal of wastes which have the potential to expose workers and public to radionuclide contamination.

Rqmt Reference: (1) OU 3-13 ROD, Section 11.1.3
(2) RD/RA Scope of Work for WAG 3 OU 3-13, Section 1.3.3
(3) Table 1.6, Assumptions G and N.

Rqmt ID: 005

Rqmt Classification: mission critical

Rqmt Text: The SSSTF shall have a design life of 30 years.

Rqmt Basis: Based on typical DOE practices. Design life for key equipment will be specified during 30% and/or 90% design activities.

Rqmt Reference: Table 1.6, Assumption V.

Technical and Functional Requirements	WAG 3 STAGING, STORAGE, SIZING, AND TREATMENT FACILITY	Identifier: TFR-17 Revision: 1 Page: 18 of 52
---------------------------------------	---	---

Rqmt ID: 029

Rqmt Classification: mission critical

Rqmt Text: The SSSTF shall be designed to store and handle non-contact waste.

Rqmt Basis: To meet the ER mission and dispose of the waste defined in the ROD.

Rqmt Reference: Table 1.6, Assumptions D and T.

3.1.2 SSSTF Major Function Requirements

3.1.2.1 Administrative Function

Rqmt ID: 006

Rqmt Classification: mission critical

Rqmt Text: The Administrative Function shall have the capability to receive and process up to 44 loads with up to 13 cubic yards per load of incoming waste within a work shift.

Rqmt Basis: This requirement defines the administrative throughput capability of processing incoming waste trucks through the facility based on expected inventory quantities and operation schedule. The number defined is a result of work performed in EDF-1547, *SSSTF Operational Scenario and Process Flows*.

Rqmt Reference: Table 1.6, Assumption T.

Rqmt ID: 016

Rqmt Classification: mission critical

Rqmt Text: The Administrative Function shall provide office and crew quarter space in which 14 personnel can perform their daily tasks in a regulatory compliant environment.

Rqmt Basis: The total space is based on the estimated number of personnel that will be required to operate the treatment and storage process as well as administer and support these operations. The number defined is a result of work performed in EDF-1547, , *SSSTF Operational Scenario and Process Flows*.

Rqmt Reference: (1) OU 3-13 ROD, Section 11.1.3
(2) Facility requirement imposed via RD/RA Scope of Work for WAG 3 OU 3-13, Section 4.3.3.4.
(3) Table 1.6, Assumption T.

Technical and Functional Requirements	WAG 3 STAGING, STORAGE, SIZING, AND TREATMENT FACILITY	Identifier: TFR-17 Revision: 1 Page: 19 of 52
---------------------------------------	---	---

Rqmt ID: 007

Rqmt Classification: other

Rqmt Text: The Administrative Function shall have the capability to determine the weight of the waste vehicle being processed to within +/- 100 lb accuracy.

Rqmt Basis: To comply with landfill standards for cell location and cell content. Trucks are paid on a per 100 lb basis.

Rqmt Reference: 40CFR264.309 (a) and (b),
40CFR264.73

Rqmt ID: 009

Rqmt Classification: other

Rqmt Text: The Administrative Function shall provide the capability to maintain waste processing and disposal records in accordance with 40CFR264.309(a) and (b).

Rqmt Basis: To comply with landfill standards for cell location and cell content.

Rqmt Reference: Table 12-3 of OU 3-13 ROD

Rqmt ID: 034

Rqmt Classification: other

Rqmt Text: The Administrative Function shall provide the capability to perform load inspection and QA verification of the load profile.

Rqmt Basis: To comply quality assurance guidelines and regulations.

Rqmt Reference: Table 1.6, Assumption J, K, L, and M.

3.1.2.2 Staging and Storage Function

3.1.2.2.1 Off-Load/Load Function

Rqmt ID: 035

Rqmt Classification: mission critical

Rqmt Text: The Off-Load/Load Function shall provide the capability to off-load and/or load non-aqueous waste from bulk transfer vehicles, roll-on roll off containers, or other containers and place in staging or storage.

Rqmt Basis: The facility needs the flexibility to support various types of material transport methods.

Rqmt Reference: Table 1.6, Assumption E.

Technical and Functional Requirements	WAG 3 STAGING, STORAGE, SIZING, AND TREATMENT FACILITY	Identifier: TFR-17 Revision: 1 Page: 20 of 52
---	---	---

Rqmt ID: 037 Rqmt Classification: mission critical

Rqmt Text: The Off-Load/Load Function shall provide the capability to off-load bulk or prepackaged operational supplies and place in storage.

Rqmt Basis: The facility needs the flexibility to support various types of transport methods.

Rqmt Reference: Project Derived Requirement

3.1.2.2.2 External Staging/Storage Function

Rqmt ID: 010 Rqmt Classification: mission critical

Rqmt Text: The External Staging/Storage Function shall provide 22256 square feet of external staging areas for non-aqueous waste.

Rqmt Basis: The SSSTF will serve as the receiving area for CERCLA wastes prior to treatment and/or disposal in the ICDF. The number defined is a result of work performed in EDF-1545, *SSSTF Waste Storage and Staging*.

Rqmt Reference: (1) OU 3-13 ROD, Section 11.1.3
(2) RD/RA Scope of Work for WAG 3 OU 3-13, Section 4.3.3.5
(3) Table 1.6, Assumption T.

Rqmt ID: 039 Rqmt Classification: mission critical

Rqmt Text: The External Staging/Storage Function shall provide for 6448 square feet of external storage area(s) for empty waste containers.

Rqmt Basis: To support typical Radiological Facility decontamination operations. The number defined is a result of work performed in –EDF-1545, *SSSTF Waste Storage and Staging*.

Rqmt Reference: Table 1.6, Assumption T.

Technical and Functional Requirements	WAG 3 STAGING, STORAGE, SIZING, AND TREATMENT FACILITY	Identifier: TFR-17 Revision: 1 Page: 21 of 52
---	---	---

3.1.2.2.3 Internal Staging/Storage Function

The utilization of SSSTF facilities for staging and/or storage may advantageous from an operational perspective. Specific design requirements for the utilization of these facilities are not specified. For example, floor space in the Treatment facility may be utilized for internal waste storage, staging, or packaging, assuming adequate administrative controls.

Rqmt ID: 012

Rqmt Classification: mission critical

Rqmt Text: The Internal Staging/Storage Function shall provide 300 cubic feet of covered RCRA/TSCA/435.1 compliant (but not permitted) waste to be utilized until treatment and/or disposal of waste can be achieved.

Rqmt Basis: The SSSTF will serve as the receiving area for wastes received from WAG 3 and other WAGs prior to disposal of the waste in the ICDF. The number defined is a result of work performed in EDF-1545, *SSSTF Waste Storage and Staging*.

Rqmt Reference: (1) OU 3-13 ROD, Section 11.1.3
(2) RD/RA Scope of Work for WAG 3 OU 3-13, Section 4.3.3.5
(3) Table 1.6, Assumption T.

3.1.2.3 Waste Treatment Function

Rqmt ID: 013

Rqmt Classification: mission critical

Rqmt Text: The Waste Treatment Function shall size reduce material to meet ICDF waste acceptance criteria.

Rqmt Basis: The SSSTF must prepare waste for disposal in accordance with WAC constraints.

Rqmt Reference: (1) OU 3-13 ROD, Section 11.1.3
(2) RD/RA Scope of Work for WAG 3 OU 3-13, Section 4.3.3
(3) Table 1.6, Assumption N.

Rqmt ID: 014

Rqmt Classification: mission critical

Rqmt Text: The Waste Treatment Function shall treat monitoring well wastes, leachate, and other secondary liquid waste to meet ICDF Evaporation Pond WAC.

Rqmt Basis: To manage and treat liquid waste.

Technical and Functional Requirements	WAG 3 STAGING, STORAGE, SIZING, AND TREATMENT FACILITY	Identifier: TFR-17 Revision: 1 Page: 22 of 52
---------------------------------------	---	---

Rqmt Reference: (1) OU 3-13 ROD, Section 11.1.3
(2) RD/RA Scope of Work for WAG 3 OU 3-13, Section 1.3.3
(3) Table 1.6, Assumption G

Rqmt ID: 015

Rqmt Classification: mission critical

Rqmt Text: The Waste Treatment Function design shall be capable of treating at least 78 cubic yards of CERCLA remediation waste per work shift.

Rqmt Basis: An analysis will be performed to establish/verify throughput requirements for the treatment process(s). The number defined is a result of work performed in EDF-1547, *SSSTF Operational Scenario and Process Flows*

Rqmt Reference: Table 1.6, Assumption T.

Rqmt ID: 041

Rqmt Classification: mission critical

Rqmt Text: The Waste Treatment Function shall provide the capability to perform reagent make-up to support treatment operations.

Rqmt Basis: An analysis will be performed to establish/verify treatment processes and the reagent make-up needed to support those processes.

Rqmt Reference: Block Flow Diagram

Rqmt ID: 043

Rqmt Classification: mission critical

Rqmt Text: The Waste Treatment Function shall provide for TBD11 square feet of storage areas for secondary waste.

Rqmt Basis: To support typical Radiological Facility operations. The number will be defined as a result of work performed in future design activities to be submitted with the RD/RA Work Plan or intermediate design submittal.

Rqmt Reference: Table 1.6, Assumptions G and T.

Technical and Functional Requirements	WAG 3 STAGING, STORAGE, SIZING, AND TREATMENT FACILITY	Identifier: TFR-17 Revision: 1 Page: 23 of 52
---	---	---

— Rqmt ID: 044 Rqmt Classification: mission critical

Rqmt Text: The Waste Treatment Function shall provide the capability to package waste not meeting ICDF WAC for off-site disposal in accordance with the off-site rule.

Rqmt Basis: To support typical Radiological Facility operations.

Rqmt Reference: (1) Table 1.6, Assumptions G and F.

3.1.2.4 Decontamination Function

— Rqmt ID: 045 Rqmt Classification: mission critical

Rqmt Text: The Decontamination Function shall provide shall provide the capability to perform decontamination of transfer vehicles, containers, and operations equipment and may occur at multiple locations.

Rqmt Basis: To support typical Radiological Facility operations.

Rqmt Reference: Block Flow Diagram

— Rqmt ID: 046 Rqmt Classification: mission critical

Rqmt Text: The Decontamination Function shall provide the capability to segregate and collect non-aqueous waste generated in the decontamination process.

Rqmt Basis: To support typical Radiological Facility operations.

Rqmt Reference: Block Flow Diagram

— Rqmt ID: 047 Rqmt Classification: mission critical

Rqmt Text: The Decontamination Function shall provide shall provide the capability to segregate and collect liquid waste generated in the decontamination process.

Rqmt Basis: To support typical Radiological Facility operations.

Rqmt Reference: Block Flow Diagram

Technical and Functional Requirements	WAG 3 STAGING, STORAGE, SIZING, AND TREATMENT FACILITY	Identifier: TFR-17 Revision: 1 Page: 24 of 52
---------------------------------------	---	---

3.1.3 Boundaries and Interfaces

Rqmt ID: 017

Rqmt Classification: environmental

Rqmt Text: All SSSTF activities shall take place within the WAG 3 area of contamination per Figure 1-10 of OU 3-13 ROD.

Rqmt Basis: To allow flexibility in managing the consolidation and remediation of wastes without triggering LDR and other RCRA requirements.

Rqmt Reference: OU 3-13 ROD page 1-12.

3.1.4 Codes, Standards, and Regulations

Rqmt ID: 025

Rqmt Classification: safety significant

Rqmt Text: The SSSTF shall be constructed and operated in accordance with the substantive requirements of applicable regulations as defined in Table 3.1.4-1, SSSTF Regulatory References.

Rqmt Basis: The ROD requires facility construction and operation to be in accordance with applicable codes and regulations.

Rqmt Reference: OU 3-13 ROD, Table 12-3.

Rqmt ID: 026

Rqmt Classification: other

Rqmt Text: The SSSTF facility shall be designed in accordance with the substantive requirements of other design standards as defined in Table 3.1.4-2, Other Design Standards.

Rqmt Basis: Required by contract with the DOE.

Rqmt Reference: BBWI Management and Operations Contract for the INEEL

Technical and Functional Requirements	WAG 3 STAGING, STORAGE, SIZING, AND TREATMENT FACILITY	Identifier: TFR-17 Revision: 1 Page: 25 of 52
---	---	---

3.1.5 Operability

— Rqmt ID: 027 Rqmt Classification: mission critical

Rqmt Text: The SSSTF shall be designed to routinely perform waste treatment in yearly campaigns that run from March to November, however the facility will remain in operation the remainder of the year.

Rqmt Basis: To reduce the complexity associated with operating through winter months.

Rqmt Reference: Table 1.6, Assumption F.

— Rqmt ID: 028 Rqmt Classification: mission critical

Rqmt Text: The SSSTF shall be designed to allow operating on a 10-hour shift, four days per week.

Rqmt Basis: To reduce operational complexity by maintaining compatibility with other site operations.

Rqmt Reference: Table 1.6, Assumption I.

— Rqmt ID: 048 Rqmt Classification: mission critical

Rqmt Text: The SSSTF shall be designed for year round acceptance of waste for storage or off-site disposal.

Rqmt Basis: To support expected operational needs.

Rqmt Reference: Table 1.6, Assumption F.

— Rqmt ID: 049 Rqmt Classification: mission critical

Rqmt Text: The SSSTF shall be designed for year round waste monitoring and management operations.

Rqmt Basis: To support expected operational needs.

Rqmt Reference: Table 1.6, Assumption F.

Technical and Functional Requirements	WAG 3 STAGING, STORAGE, SIZING, AND TREATMENT FACILITY	Identifier: TFR-17 Revision: 1 Page: 26 of 52
---------------------------------------	---	---

3.2 Special Requirements

3.2.1 Radiation and Other Hazards

Radiation and Other Hazard requirements are defined in regulations imposed in Table 3.1.4-1.

3.2.2 ALARA

Rqmt ID: 052

Rqmt Classification: safety

Rqmt Text: To comply with the ALARA program, the SSSTF shall be designed to limit personnel exposure (both internal and external) to a maximum of 500 mR/year .

Rqmt Basis: To support typical Radiological Facility operations.

Rqmt Reference: (1) DOE Order 5400.5
(2) Table 1.6, Assumption T.

3.2.3 Nuclear Criticality Safety

Not Applicable based on the SSSTF classification of "Nonnuclear, Radiological".

3.2.4 Industrial Hazards

Industrial Hazard requirements are defined in regulations imposed in Table 3.1.4-1.

3.2.5 Operating Environment and Natural Phenomena

Rqmt ID: 030

Rqmt Classification: safety significant

Rqmt Text: With respect to natural phenomena hazards (seismic, wind, and flood), the SSSTF shall be categorized as Performance Category PC-1 as defined by DOE-STD-1020 and 1021.

Rqmt Basis: Required constraint for a facility where NPH caused failure could result in loss of function for hazardous material recovery, as well as possible release of radioactive and toxic materials. The classification defined is a result of work performed in EDF-1546, *Preliminary Hazard Classification Analysis*.

Rqmt Reference: DOE-STD-1020 and 1021.

Technical and Functional Requirements	WAG 3 STAGING, STORAGE, SIZING, AND TREATMENT FACILITY	Identifier: TFR-17 Revision: 1 _ Page: 27 of 52
---	---	---

Rqmt ID: 033

Rqmt Classification: environmental

Rqmt Text: The SSSTF shall be constructed outside of the area designated in the ROD as the 100 year floodplain.

Rqmt Basis: The ROD stipulates that the ICDF landfill will be located outside of the 100 year floodplain. Optimal location of the SSSTF is adjacent to the landfill, thus this requirement applies to the SSSTF as well.

Rqmt Reference: OU 3-13 ROD, page 11-18, Figure 5-1, pg 5-2.

3.2.6 Human Interface Requirements

No human interface requirements have been identified.

3.2.7 Specific Commitments

No specific commitment requirements have been identified.

3.3 Engineering Design Requirements

3.3.1 Civil and Structural

Rqmt ID: 018

Rqmt Classification: other

Rqmt Text: The SSSTF shall be equipped with fire water for both automatic sprinklers and fire hydrants.

Rqmt Basis: To support typical operations

Rqmt Reference: Table 1.6, Assumption R.

Rqmt ID: 019

Rqmt Classification: other

Rqmt Text: The SSSTF shall be equipped with telephone capabilities.

Rqmt Basis: To support typical operations

Rqmt Reference: Table 1.6, Assumption R.

Technical and Functional Requirements	WAG 3 STAGING, STORAGE, SIZING, AND TREATMENT FACILITY	Identifier: TFR-17 Revision: 1 Page: 28 of 52
---	---	---

Rqmt ID: 020 Rqmt Classification: other

Rqmt Text: The SSSTF shall be equipped with fire alarm capabilities.

Rqmt Basis: To support typical operations

Rqmt Reference: Table 1.6, Assumption R.

Rqmt ID: 021 Rqmt Classification: other

Rqmt Text: The SSSTF shall be equipped with electrical power capabilities.

Rqmt Basis: To support typical operations

Rqmt Reference: Table 1.6, Assumption R.

Rqmt ID: 022 Rqmt Classification: other

Rqmt Text: The SSSTF shall be equipped with standby power capabilities.

Rqmt Basis: To support typical operations

Rqmt Reference: Table 1.6, Assumption R.

Rqmt ID: 023 Rqmt Classification: other

Rqmt Text: The SSSTF shall be equipped with potable water, raw water, and sewer connections.

Rqmt Basis: To support typical operations

Rqmt Reference: Table 1.6, Assumption R.

Rqmt ID: 024 Rqmt Classification: other

Rqmt Text: The SSSTF shall be equipped with computer network and data communication functions.

Rqmt Basis: To support typical operations

Technical and Functional Requirements	WAG 3 STAGING, STORAGE, SIZING, AND TREATMENT FACILITY	Identifier: TFR-17 Revision: 1 Page: 29 of 52
---	---	---

Rqmt Reference: Table 1.6, Assumption R.

3.3.2 Mechanical and Materials

No additional Mechanical and Materials requirements to those imposed by the DOE-ID Architectural Engineering Standards have been identified.

3.3.3 Chemical and Process

Rqmt ID: 031

Rqmt Classification: other

Rqmt Text: The Waste Treatment Function shall be designed to accept wooden containers and other debris up to 4 x 4 x 8 ft in size.

Rqmt Basis: To simplify operational concept for anticipated waste treatment. Automated does not necessarily imply robotics and may involve mechanical feeding. This does not pertain to material handling for entry to the sizing equipment.

Rqmt Reference: OU 3-13 ROD, Table 4-1.

3.3.4 Electrical Power

No additional Electrical Power requirements to those imposed by the DOE-ID Architectural Engineering Standards have been identified.

3.3.5 Instrumentation and Control

No additional Instrumentation and Control requirements to those imposed by the DOE-ID Architectural Engineering Standards have been identified.

3.3.6 Computer Hardware and Software

No Computer Hardware and Software requirements have been identified.

3.3.7 Fire Protection

Technical and Functional Requirements	WAG 3 STAGING, STORAGE, SIZING, AND TREATMENT FACILITY	Identifier: TFR-17 Revision: 1 Page: 30 of 52
---------------------------------------	---	---

No additional Fire Protection requirements to those imposed by the DOE-ID Architectural Engineering Standards have been identified.

3.4 Testing and Maintenance Requirements

3.4.1 Testability

No testability requirements have been identified.

3.4.2 TSR-Related Surveillances

No TSR-related surveillance requirements have been identified.

3.4.3 Non-TSR Inspections and Testing

No non-TSR inspection and testing requirements have been identified.

3.4.4 Maintenance

No maintenance requirements have been identified.

3.4.5 Other Requirements

3.4.6 Security and SNM Protection

Security requirements are defined in regulations imposed in Table 3.1.4-1.

3.4.7 Special Installation Requirements

No Special Installation Requirements have been identified.

3.4.8 Reliability, Availability, and Preferred Failure Modes

No Reliability, Availability, and Preferred Failure Mode Requirements have been identified.

3.4.9 Quality Assurance

No additional Quality Assurance requirements to those imposed by the DOE-ID Architectural Engineering Standards and applicable regulations have been identified. See Table 3.1.4-1 for imposed Quality Assurance regulations.

Technical and Functional Requirements	WAG 3 STAGING, STORAGE, SIZING, AND TREATMENT FACILITY	Identifier: TFR-17 Revision: 1 Page: 31 of 52
---	---	---

3.4.10 Miscellaneous

No Miscellaneous requirements have been identified.

This page intentionally left blank

Technical and Functional Requirements	WAG 3 STAGING, STORAGE, SIZING, AND TREATMENT FACILITY	Identifier: TFR-17 Revision: 1 Page: 33 of 52
---------------------------------------	---	---

Table 3.1.4-1 SSSTF REGULATORY REFERENCES

SSSTF/ICDF Complex Functional Block Flow Diagram Block Number	ARAR	Description	Applicable Unit
General¹			
	IDAPA 16.01.05.008 (40 CFR 264.16(a)(1) and (c))	Personnel training	Entire ICDF Complex
	DOE Order 435.1	Radioactive waste management performance objectives to protect workers	Entire ICDF Complex
	DOE Order 5400.5	Exposures to the public will be kept ALARA	Entire ICDF Complex
	IDAPA 16.01.01.650, 16.01.01.651	Fugitive dust emissions	Entire ICDF Complex
	40 CFR 122.26	Storm water discharges during construction	Entire ICDF Complex during construction
	IDAPA 16.01.05.008 [40 CFR 264.15(a),(c)]	General inspection requirements	Entire ICDF Complex
	IDAPA 16.01.05.008 [40 CFR 264.14(a), (b), (c)]	Site security	Entire ICDF Complex
	16 USC 469 et seq. 36 CFR 65	National Archeological and Historical Preservation Act	Entire ICDF Complex
	25USC 3001	Native American Graves Protection and Repatriation Act	Entire ICDF Complex

1. All ARARS are imposed by Table 12-3 of the ROD

Technical and Functional Requirements	WAG 3 STAGING, STORAGE, SIZING, AND TREATMENT FACILITY	Identifier: TFR-17 Revision: 1 Page: 34 of 52
---------------------------------------	---	---

SSSTF/ICDF Complex Functional Block Flow Diagram Block Number	ARAR	Description	Applicable Unit
	IDAPA 16.01.05.008 (40 CFR 264, Subpart F)	Releases from solid waste management units	Entire ICDF Complex
	IDAPA 16.01.05.008 (40 CFR 264, Subpart G)	Closure and postclosure	Entire ICDF Complex
	IDAPA 16.01.01.585 IDAPA 16.01.01.586	Rules for the control of air pollution in Idaho	Entire ICDF Complex
	IDAPA 16.01.05.005 (40 CFR 261)	Identification and listing of hazardous waste	All waste received from outside OU 3-13 AOC
	40 CFR 61.92 40 CFR 61.93	NESHAPS for radionuclides from DOE Facilities, emission monitoring and emission compliance	Entire ICDF Complex
1.0 Administration Function			
1.1 Transport scale		None	
1.2 Transport load inspection and verification	IDAPA 16.01.05.008 (40 CFR 264.309(a)and (b)	Surveying and record keeping,	All loads entering the complex to know hazardous waste type. Map Location of waste by type within each cell
	IDAPA 16.01.05.008 (40 CFR 264, subpart I)	Use and management of containers	All loads entering the complex which have containers
	40 CFR 761.50(b)(7)	PCB storage and disposal	PCB record keeping as referenced in 761.65(a)(2)(ii)(iii)